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2001-0079

ABSTRACT OF THE DISCLOSURE

0046 A wafer blade for picking up or delivering wafers from or to a wafer cassette or a process tool is described. The wafer blade carries a wafer on a top surface of the blade, and is capable of detecting any undesirable contact with wafers on a bottom surface of the blade. The wafer blade is constructed by a blade body of generally elongated shape that has a top surface and a bottom surface parallel to each other, and a strain sensor such as a piezoelectric thin film sensor mounted on and at least partially cover the bottom surface of the blade body for detecting any contact with the wafer and for sending an alarm signal to a central process controller when such contact or scratch of a wafer has occurred.